

## CLAIMS

1. A composite ply structure (40A) as an intermediate article of manufacture for use as a carcass ply for a tire (10), the composite ply structure (40) has a primary ply (40A) reinforced by cords (41), the cords (41) being encapsulated in unvulcanized rubber (44), a pair of ply extensions (40B) reinforced by flexible cords (43), the flexible cords (43) being encapsulated in unvulcanized rubber (44), the ply extensions (40B) each have an end (33) overlappingly joined to the primary ply (40A) at a first end (45) and the other ply extension (40B) being joined at a second end (46) of the primary ply (40A), the composite ply (40) characterized by:

a joint interface (70) between the overlapping ply extensions (40B) and the primary ply (40A), the joint interface (70) being at least surface precured sufficient to prevent slippage of the ply extension (40B) relative to the primary ply (40A) during subsequent shaping and curing of the carcass.

2. The composite ply (40) of claim 1 further characterized by the overlapping joint interface (70) being at least 1 cm in width.

3. The composite ply (40) of claim 1 wherein the cords (41) of the primary ply (40A) are radially oriented in the range of  $65^{\circ}$  to  $90^{\circ}$  relative to the ply length.

4. the composite ply (40) of claim 3 wherein the cords (43) of the ply extension (40B) are oriented radially in the range of  $65^{\circ}$  to  $90^{\circ}$  relative to the ply length.

5. The composite ply (40) of claim 3 wherein the cords (43) of the ply extension (40B) are oriented at a bias angle relative to the ply length.

6. The method of preforming a composite ply (40), the composite ply (40) having a primary ply (40A) and a pair of ply extensions (40B) for use in the carcass of the tire (10), the method comprising the steps of:

cutting to a predetermined width ( $W_A$ ) primary ply (40A) reinforced with parallel cords (41) encapsulated in unvulcanized rubber (44), the width ( $W_A$ ) extending between a first end (45) and a second end (46);

applying a pair of ply extensions (40B) of predetermined widths ( $W_B$ ), one ply extension (40B) being overlappingly joined to a first end (45) and one ply extension (40B) being overlappingly joined to a second end (46), each ply extension (40B) being reinforced with parallel cords (43) encapsulated in unvulcanized rubber (44);

precuring the overlappingly joined ply extensions (40B) to the primary ply (40A) locally along the adjoining overlapping joint surfaces (70) thereby forming a composite ply (40) having a predetermined total width ( $W_T$ ), the composite ply being unvulcanized except at the overlapping joints (70).

7. The method of preforming a composite ply (40) of claim 6 further comprising the steps of:

applying an adhesive coating (80) to the adjoining overlapping joint surfaces (70) prior to curing the joint (70).

5 8. The method of preforming a composite ply (40) of claim 7 wherein the adhesive coating (80) includes induction heat sensitive material (82).

9. The method of preforming a composite ply (40) of claim 8 further comprising the steps of:

10 activating an induction field of energy along the overlapping joints (70), thereby heating the adhesive (80) sufficient to at least surface precure the joints (70).

10. The method of preforming a composite ply (40) of claim 9 further comprising:

applying force to the induction heated joints (70), thereby stitching the joint (70).